



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/719,423

11/21/2003

Eric R. Hansen

204560-73806

3387

7590

11/29/2006

BARMES & THORNBURG

11 South Meridian Street
Indianapolis, IN 46204

EXAMINER

LU, JIPING

ART UNIT

PAPER NUMBER

3749

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/719,423

Applicant(s)

HANSEN ET AL.

Examiner

Jiping Lu

Art Unit

3749

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 31-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29, 31-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

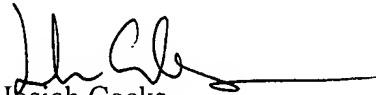
1. In view of the appeal brief filed on 9/8/06, PROSECUTION IS HEREBY REOPENED. New grounds rejections are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:


Josiah Cocks.
Acting SPE

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 26-29, 31-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Branvold (U.S.Pat. 3,584,850).

Brandvold shows a mineral lime (CaO) processing inclined rotary kiln 12 with a lower combustion air end 14b and an upper material feed end 14a, 18, 20d. An air inlet opening (at 24e) is located between two ends. An air nozzle 24e extends into the rotary vessel through the air inlet opening of the wall of vessel. A pressurized air source 24c is coupled to the air nozzle 24e. A preheater or precalcining assembly 38 (col. 8, lines 71-74) is positioned proximate to the upper end 18. The preheating or precalcining assembly has a stationary vessel 22, 38, 40 through which the mineral passes prior to advancement into the rotary vessel 12. The kiln existing hot flue gas stream passes in contact with the mineral subsequent to advancement out of the rotary vessel. A stationary hood 14k is positioned proximate to the combustion air inlet lower end 14b and a burner 16a is proximate to the combustion air inlet lower end 14b. For claim 31, a mineral feed assembly 38, 40, 20d is operable to heat lime mineral and thereafter advance the lime mineral into the upper end of the rotary vessel 18.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iken et al (U. S. Pat. 3,488,700) in view of Graat et al. (U. S. Pat. 4,255,115).

Iken shows a method of operating a mineral process kiln 1 having inclined rotary kiln. First combustion air 8 and fuel 4 is introduced at the lower end of the rotary kiln. Additional or second enriched combustion air 7, 9 is introduced into the kiln 1 between the upper and lower ends of the kiln (through the kiln wall not numbered which supports material 3). However, Iken et al. do not expressly disclose a method of advancing a first quantity of combustion air to create sub-stoichiometric conditions and advancing a second quantity of combustion air to create super-stoichiometric conditions. Graat et al. teach a method of controlling the air/fuel stoichiometry including advancing a first quantity of combustion air 7 and fuel 6 at the end of the combustion chamber 1 and advancing a second quantity of combustion air (at 12) through an opening 11 in a wall of the chamber between two ends 2, 14' of the chamber 1. Combustion takes place with an excess of oxygen (i. e. excess of first combustion air which creates sub-stoichiometric conditions, col. 4, lines 60-64). As shown in Fig. 5, second quantity of combustion air is fed into the chamber 1 for a complete combustion (i. e. supper-stoichiometric combustion, col. 6, lines 10-46). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the air/fuel stoichiometry controlling method of Iken et al to include the steps of advancing a first quantity of combustion air to create sub-stoichiometric conditions and advancing a second quantity of combustion air to create super-stoichiometric

Art Unit: 3749

conditions as taught by Graat et al in order to improve the combustion efficiency. With regard to claimed numerical ranges of the combustion air mass flow rate, it is deemed to be an obvious matter of design choice. Therefore, it would have been an obvious to one skill in the art to supply the combustion air at any desired mass flow rate in order to obtain the optimum result since applicant has not disclosed that the claimed combustion air mass flow rate range solves any stated problem in a new or unexpected way or is for any particular purpose which is unobvious to one of ordinary skill in the art.

6. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandvold (U.S.Pat. 3,584,850) in view of Graat et al. (U. S. Pat. 4,255,115) or Baukal, Jr. et al. (U. S. Pat. 5,413,476).

Brandvold shows a mineral lime (CaO) processing inclined rotary kiln 12 with a lower combustion air end 14b and an upper material feed end 14a, 18, 20d. An air inlet opening 24e is located between two ends. A preheater or precalcining assembly 38, 40 (incoming mineral passes inlet chute 20d and is directly preheated by the exiting hot flue gas 44 in vessel 38) is positioned proximate to the upper end 18. The preheating or precalcining assembly has a stationary vessel 38, 40 through which the mineral passes prior to advancement into the rotary vessel. The kiln existing hot flue gas stream passes in contact with the mineral subsequent to advancement out of the rotary vessel. A stationary hood 14k is positioned proximate to the combustion air inlet lower end 14b and a burner 16a is proximate to the combustion air inlet lower end 14b. However, Brandvold does not expressly disclose a method of advancing a first quantity of combustion air to create sub-stoichiometric conditions and advancing a second quantity of combustion air to create super-stoichiometric conditions. Graat et al. teach a method

Art Unit: 3749

of controlling the air/fuel stoichiometry including advancing a first quantity of combustion air 7 and fuel 6 at the end of the combustion chamber 1 and advancing a second quantity of combustion air (at 12) through an opening 11 in a wall of the chamber between two ends 2, 14' of the chamber 1. Combustion takes place with an excess of oxygen (i. e. excess of first combustion air which creates sub-stoichiometric conditions, col. 4, lines 60-64). As shown in Fig. 5, second quantity of combustion air is fed into the chamber 1 for a complete combustion (i. e. super-stoichiometric combustion, col. 6, lines 10-46). Baukal illustrated the importance and the desire to have two stage combustions, e.g. sub-stoichiometric and super-stoichiometric combustion in order to maximize the efficiency fuel efficiency and reduce pollutants. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the air/fuel stoichiometry controlling method of Brandvold to include the steps of advancing a first quantity of combustion air to create sub-stoichiometric conditions and advancing a second quantity of combustion air to create super-stoichiometric conditions as taught by Graat et al or Baukal in order to improve the combustion efficiency. With regard to claimed numerical ranges of the combustion air mass flow rate, it is deemed to be an obvious matter of design choice. Therefore, it would have been an obvious to one skill in the art to supply the combustion air at any desired mass flow rate in order to obtain the optimum result since applicant has not disclosed that the claimed combustion air mass flow rate range solves any stated problem in a new or unexpected way or is for any particular purpose which is unobvious to one of ordinary skill in the art.

Response to Arguments


7. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jiping Lu whose telephone number is 571 272 4878. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, COCKS JOSIAH can be reached on 571 272-4874. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jiping Lu
Primary Examiner
Art Unit 3749

J. L.